

IN THE CLAIMS

The following listing of the claims represents the claims now present in this application.

This listing supersedes and replaces all prior claim listings. Please amend claims 17 and 23-28, and add new claims 29-35 as follows:

1. Cancelled.
2. Cancelled.
3. Cancelled.
4. Cancelled.
5. Cancelled.
6. Cancelled.
7. Cancelled.
8. Cancelled.
9. Cancelled.
10. Cancelled.
11. Cancelled.
12. Cancelled.
13. Cancelled.
14. Cancelled.
15. Cancelled.
16. Cancelled.

17. (Currently Amended) A chemical analytic apparatus which performs various kinds of processing for analyzing very small droplets chemically, including:

in a condition where magnetic ultrafine particles are mixed and contained inside a droplet,

a conveyance means moving in a direction while applying a magnetic field, wherein the droplet, [[to]] into which said magnetic ultrafine particles were mixed, is conveyed in through another liquid that differs from the droplet and that is fixed in a fixed place, said conveyance means while maintaining a single droplet in the another liquid, conveys the droplet is conveyed for processing of chemical analysis, due to attraction by said magnetic ultrafine particles to the magnetic field of the conveyance means; and

a processing means by which operations for processing of chemical analysis are performed one by one in the process in which the droplet to which said magnetic ultrafine particles were mixed is conveyed by said conveyance means, wherein

plural kinds of the droplets to which said magnetic ultrafine particles are mixed and of only the droplets are provided, and said processing means is covered by thin plates at least on four side faces and a bottom face so as to be filled with the another liquid, said processing means is separated by plural bulkheads projecting into the processing means from a top side to form into plural small compartments communicating which communicate with each other, and said plural kinds of the droplets to which said magnetic ultrafine particles were mixed and of only the droplets are arranged in said small compartments, and

an optional droplet out of said plural kinds to which said magnetic ultrafine particles are mixed and which is arranged in an optional small compartment is conveyed to other small compartments by said conveyance means in through the another liquid fixedly filled in the processing means while maintaining a single optional droplet in the another liquid, by passing through each bulkhead separating one small compartment from another, and a chemical reactive

operation itself or part of the operation is performed by uniting the optional droplet with another droplet out of said plural kinds arranged in the other small compartments.

18. (Previously Presented) The chemical analytic apparatus according to claim 17, wherein when the optional droplet out of said plural kinds to which said magnetic ultrafine particles are mixed and which is arranged in an optional small compartment is conveyed to said other small compartments by said conveyance means by passing through each bulkhead separating one small compartment from another, the optional droplet out of said plural kinds to which said magnetic ultrafine particles are mixed is separated to a droplet that includes said magnetic ultrafine particles and a droplet that does not include said magnetic ultrafine particles, by using physical and chemical characteristics such as wettability and surface tension of said optional droplet.

19. (Previously Presented) The chemical analytic apparatus according to claim 17, wherein by controlling the magnetic field which is externally applied to the droplet to which said magnetic ultrafine particles are mixed, said magnetic ultrafine particles are dispersed and cohered in the inside of the droplet, and also the operations for processing of chemical analysis of the droplet to which said magnetic ultrafine particles are mixed are performed.

20. (Previously Presented) The chemical analytic apparatus according to claim 19, wherein other than the control of said external magnetic field, at least physical and chemical reaction control by light, heat or pH is used.

21. (Previously Presented) The chemical analytic apparatus according to claim 17, wherein in the condition where a specimen for performing chemical reactive operation adhered to surfaces of said magnetic ultrafine particles, said magnetic ultrafine particles are used as a carrier to perform the chemical reactive operation to said specimen.

22. (Previously Presented) The chemical analytic apparatus according to claim 17, wherein by combining a plurality of said small compartments which are separated by plural bulkheads and which become said processing means, at least a series of chemical reactive operation by reaction, separation and dilution to a specimen that adhered to surfaces of said magnetic ultrafine particles is performed.

23. (Currently Amended) A chemical analytic apparatus method which performs various kinds of processing for analyzing very small droplets chemically, including:
in a condition where magnetic ultrafine particles are mixed and contained inside a droplet,
a conveyance step by which a conveyance unit moves in a direction while applying a magnetic field, wherein the droplet, into which said magnetic ultrafine particles were mixed, is conveyed ~~in~~ through another liquid that differs from the droplet and that is fixed in a fixed place, while maintaining a single droplet in the another liquid, the droplet is conveyed for processing of the chemical analysis, due to attraction by said magnetic ultrafine particles to the magnetic field of the conveyance unit; and

processing steps by which operations for processing of chemical analysis are performed one by one in the process in which the droplet to which said magnetic ultrafine particles were mixed is conveyed by said conveyance step, wherein

plural kinds of the droplets to which said magnetic ultrafine particles are mixed and of only the droplets are provided, and the processing conditions by said processing steps are formed by a processing unit covered by thin plates at least on four side faces and a bottom face so as to be filled with the another liquid, said processing unit is separated by plural bulkheads projecting into the processing unit from a top side to form plural small compartments ecommunicating which communicate with each other, and said plural kinds of the droplets to which said magnetic ultrafine particles were mixed or only the droplets are arranged in said small compartments, and an optional droplet out of said plural kinds of droplets to which said magnetic ultrafine particles were mixed and which is arranged in an optional small compartment is conveyed by said conveyance unit [[in]] through the another liquid fixedly filled in the processing unit while maintaining a single optional droplet [[on]] in the another liquid by passing through each bulkhead separating one said small compartment from another, and a chemical reactive operation itself or part of the operation is performed by uniting the optional droplet with another droplet out of said plural kinds arranged in the other small compartments.

24. (Currently Amended) The chemical analytic apparatus method according to claim 23, wherein

when the optional droplet out of said plural kinds to which said magnetic ultrafine particles are mixed and which is arranged in the optional small compartment is conveyed to said

other small compartments by said conveyance step by passing through each bulkhead separating one small compartment from another,

the optional droplet out of said plural kinds to which said magnetic ultrafine particles are mixed is separated to a droplet that includes said magnetic ultrafine particles and a droplet that does not include said magnetic ultrafine particles, by using physical and chemical characteristics such as wettability and surface tension of said optional droplet.

25. (Currently Amended) The chemical analytic apparatus method according to claim 23, wherein

by controlling the magnetic field which is externally applied to the droplet to which said magnetic ultrafine particles are mixed, said magnetic ultrafine particles are dispersed and cohered in the inside of the droplet, and also the operation of a specimen that adhered to surfaces of said magnetic ultrafine particles is performed.

26. (Currently Amended) The chemical analytic apparatus method according to claim 25, wherein

other than the control of said external magnetic field, at least physical and chemical reaction control by light, heat or pH is used.

27. (Currently Amended) The chemical analytic apparatus method according to claim 23, wherein

in the condition where a specimen for performing chemical reactive operation adhered to surfaces of said magnetic ultrafine particles, said magnetic ultrafine particles are used as a carrier

to perform the chemical reactive operation to said specimen.

28. (Currently Amended) The chemical analytic apparatus method according to claim 23, wherein

by combining a plurality of said small compartments which are separated by plural bulkheads and which form the processing conditions by said processing steps, at least a series of chemical reactive operation by reaction, separation and dilution to a specimen that adhered to surfaces of said magnetic ultrafine particles is performed.

29. (New) A chemical analytic method which performs various kinds of processing for chemically analyzing very small droplets, the method comprising the steps of:

introducing a droplet containing magnetic ultrafine particles into a first small compartment;

conveying the droplet, containing the magnetic ultrafine particles, through a stationary fluid by a magnetic force, the droplet passing beneath a first projecting bulkhead and into a second small compartment;

uniting the droplet, containing the magnetic ultrafine particles, with at least another droplet which is stationary within the second small compartment;

conveying the united droplet to a front of a second projecting bulkhead by the magnetic force;

conveying via the magnetic force the united droplet beneath the second projecting bulkhead, wherein a main portion of the united droplet is unable to pass the second projecting bulkhead and only a peripheral portion of the united droplet that includes the magnetic ultrafine

particles is conveyed by the magnetic force into a third small compartment such that the united droplet is separated and divided into a droplet including the magnetic ultrafine particles and a droplet that does not contain the magnetic ultrafine particles;

conveying via the magnetic force the divided droplet containing the magnetic ultrafine particles into a fourth small compartment containing at least a further droplet which is stationary within the fourth small compartment;

uniting the divided droplet with the magnetic ultrafine particles with the further droplet;
conveying via the magnetic force the further united droplet with the ultrafine magnetic particles into a small detection compartment to detect the result of the processing; and
discharging the droplet from the small detection compartment.

30. (New) A chemical analytic method which performs various kinds of processing for chemically analyzing very small droplets, the method comprising steps of:

introducing a droplet containing specimens and magnetic ultrafine particles into a chemical analytic apparatus, the apparatus separated into plural small compartments communicating with each other and filled with a liquid that is stationary in the apparatus; and
conveying the droplet containing the specimens and the magnetic ultrafine particles that has been introduced into the apparatus through the stationary liquid in the apparatus, from one compartment to another compartment of the apparatus for performing processing for chemically analyzing the droplet, by moving a magnetic field generation device arranged adjacent to the apparatus in a direction in which the droplet is to be conveyed, the magnetic field generation device generating a magnetic field to which the magnetic ultrafine particles contained in the droplet are attracted.

31. (New) The chemical analysis method according to claim 30, wherein the chemical analytic apparatus filled with the liquid is separated into the plural small compartments communicating with each other by plural bulkheads projecting into the apparatus from a top side thereof.

32. (New) The chemical analysis method according to claim 31, wherein the step of introducing the droplet containing specimens and magnetic ultrafine particles includes introducing the droplet containing the specimens and the magnetic ultrafine particles into a first small compartment of the plural small compartments, and

wherein the step of conveying the droplet containing the specimens and the magnetic ultrafine particles from one compartment to another compartment includes conveying the droplet containing the specimens and the magnetic ultrafine particles from the first small compartment to a second small compartment of the plural compartments, the droplet passing beneath a first projecting bulkhead of the plural bulkheads separating the first small compartment from the second small compartment, and uniting the droplet with a droplet of a reactive agent which is fixed in a fixed place within the second small compartment.

33. (New) The chemical analysis method according to claim 32, wherein the step of conveying the droplet containing the specimens and the magnetic ultrafine particles from one compartment to another compartment further includes conveying the united droplet containing the specimens and the magnetic ultrafine particles from the second small compartment to a third small compartment of the plural compartments, the united droplet passing beneath a second

projecting bulkhead of the plural bulkheads separating the second small compartment from the third small compartment, and separating and dividing the united droplet into a droplet containing the magnetic ultrafine particles and a droplet not containing the magnetic ultrafine particles, only the droplet containing the magnetic ultrafine particles conveyed to the third small compartment.

34. (New) The chemical analysis method according to claim 33, wherein the step of conveying the droplet containing the specimens and the magnetic ultrafine particles from one compartment to another compartment further includes conveying the divided droplet containing the magnetic ultrafine particles from the third small compartment into a fourth small compartment of the plural compartments, the divided droplet passing beneath a third projecting bulkhead of the plural bulkheads separating the third small compartment from the fourth small compartment, and uniting the divided droplet with a droplet for dilution which is fixed in a fixed place within the fourth small compartment.

35. (New) The chemical analysis method according to claim 34, wherein the step of conveying the droplet containing the specimens and the magnetic ultrafine particles from one compartment to another compartment further includes conveying the further united droplet from the fourth small compartment into a fifth small compartment of the plural small compartments to detect a result of the processing.